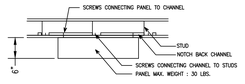
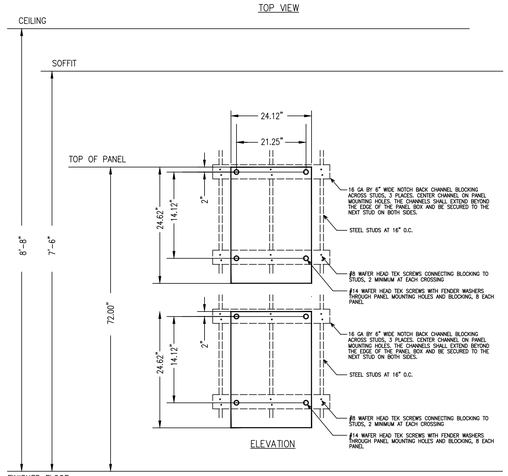
MOUNTING DETAILS

PANEL ANCHORAGE NOTE

ATTACHMENT OF EQUIPMENT WEIGHING LESS THAN 400 LBS. AND SUPPORTED DIRECTLY ON FLOOR OR ROOF STRUCTURE, FURNITURE OR TEMPORARY OR MOVABLE EQUIPMENT AND EQUIPMENT WEIGHING LESS THAN 20 LBS. THAT IS SUPPORTED BY VIBRATION ISOLATION DEVICES SUSPENDED FROM ROOF, WALL OR FLOOR NEED NOT BE DETAILED ON PLANS (CBC TITLE 24, PART 2, SECTION 1630A.1). HOWEVER, SUCH EQUIPMENT MUST BE SUPPORTED AND ANCHORED TO RESIST FORCES PRESCRIBED BY SECTION 1630A.2 AND THE ANCHORAGE SHALL BE APPROVED BY THE STRUCTURAL ENGINEER OF RECORD AS PART OF FIELD REVIEW & INSPECTION. THE INSPECTOR OF RECORDS SHALL ASSURE THAT THE ABOVE REQUIREMENTS ARE ENFORCED.

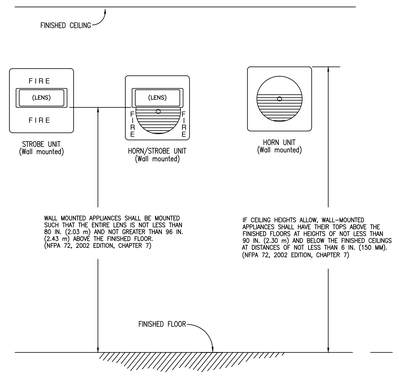


TOP VIEW

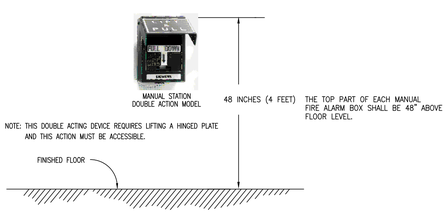


ELEVATION

TYPICAL MOUNTING DETAIL OF MSE-2
MXL FACP ENCLOSURE
LOCATED AT LEVEL ONE LOBBY/RECEPTION 102



TYPICAL ELEVATION DETAIL
OF AUDIBLE & VISUAL ALARM DEVICE

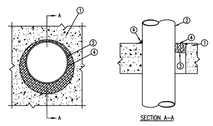


TYPICAL ELEVATION DETAIL
OF MANUAL PULL STATION

THROUGH-PENETRATION FIRESTOP SYSTEM DETAILS

SYSTEM NO. CAJ1044

T RATING - 0 HR
L RATING AT AMBIENT = 2 CFM/SQ FT (SEE ITEM 4)
L RATING AT 400 F - LESS THAN 1 CFM/SQ FT (SEE ITEM 4)



1. FLOOR WALL ASSEMBLY-LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE, EXCEPT AS NOTED IN TABLE UNDER ITEM 4. MIN THICKNESS OF SOLID CONCRETE FLOOR OR WALL ASSEMBLY IS 4-1/2 IN. FLOOR MAY ALSO BE CONSTRUCTED OF ANY MIN 6 IN. THICK UL CLASSIFIED HOLLOW-CORE, PRECOAT CONCRETE UNITS. WHEN FLOOR IS CONSTRUCTED OF HOLLOW-CORE PRECOAT CONCRETE UNITS, PACKING MATERIALS (ITEM 3) AND CAULK FILL MATERIAL (ITEM 4) TO BE INSTALLED SYMETRICALLY ON BOTH SIDES OF THE FLOOR, FLUSH WITH FLOOR SURFACE. WALL ASSEMBLY MAY ALSO BE CONSTRUCTED OF CLASSIFIED CONCRETE BLOCKS. MAX DIA. OF OPENING IS 32 IN.
   SEE CONCRETE BLOCKS (CAZT) AND PRECAST CONCRETE UNITS (QTFV) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURER
1A. STEEL SLEVE - (OPTIONAL NOT SHOWN) NOM 16 IN. (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL SLEEVE CAST OR GROUTED INTO FLOOR OR WALL ASSEMBLY. SLEEVE MAY EXTEND A MAX OF 2 IN. ABOVE TOP FLOOR OR BEYOND EITHER SURFACE OF WALL.
2. PIPE OR CONDUIT - NOM 30 IN.DIA. (OR SMALLER) CAST IRON OR SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 6 IN. DIA. (OR SMALLER) STEEL CONDUIT, NOM 3 IN. DIA. (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBE OR NOM 4 IN. DIA. (OR SMALLER) STEEL ELECTRICAL METALIC TUBING. MAX ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF THROUGH OPENING NOT TO EXCEED 2 IN. MIN ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF THROUGH OPENING IS 0 IN. (POINT CONTACT). PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDE OF FLOOR OR WALL ASSEMBLY.
3. PACKING MATERIAL - POLYETHYLENE BACKER ROD OR NOM 1 IN. THICKNESS OF THIGHTLY-PACKED MINERAL WOOL BATT OR GLASS FIBER INSULATION FRIMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OF FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMODATE THE REQUIRED THICKNESS OF CAULK FILL MATERIAL (ITEM 4).
4. FILL, VOID OR CAVITY MATERIAL - CAULK - APPLIED TO FILL THE ANNULAR SPACE FLUSH WITH TOP SURFACE OF FLOOR. IN WALL ASSEMBLIES, REQUIRED CAULK THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL, FLUSH WITH WALL SURFACE. THE HOURLY F RATING AND THE MIN REQUIRED CAULK THICKNESS ARE DEPENDENT UPON A NUMBER OF PARAMETERS, AS SHOWN ON THE FOLLOWING TABLE.

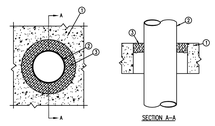
MIN FLOOR OR WALL THKNS, IN	NOM PIPE OR TUBE OR CONDUIT DIA, IN	MAX ANNULAR SPACE, IN	MIN CAULK THKNS, IN	F RATING, HR
4-1/2	1/2-12	2-1/8	1/2	2
5-1/2	1/2-12	2-1/8	1/2	2
4-1/2	1/2-6	1-1/8	1/4(a)	2
4-1/2	1/2-12	1-1/4	1/2	3
4-1/2	1/2-20	2	1	3
4-1/2	22-30	2	1	3
5-1/2	1/2-6	1-3/8	1(b)	4

(a) MIN 2 IN THICKNESS OF MINERAL-WOOL BATT INSULATION REQUIRED IN ANNULAR SPACE.
(b) MIN 1 IN. THICKNESS OF MINERAL-WOOL BATT INSULATION REQUIRED IN ANNULAR SPACE ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. MIN 1IN. THICKNESS OF CAULK TO BE INSTALLED FLUSH WITH EACH SURFACE FLOOR OR WALL ASSEMBLY.

MINNESOTA MINING & MANUFACTURING CO - TYPES CP-25 WB, CP-25 WB+.
(NOTE: L RATING AND OR USE OF OPTIONAL SLEEVE APPLY ONLY WHEN TYPE CP-25WB+ CAULK IS USED).

SYSTEM NO. CAJ1027

F RATING - 3 HOUR
T RATING - 0 HOUR



1. FLOOR OR WALL ASSEMBLY - MIN 4-1/2 IN. THICK LIGHTWEIGHT OR NORMAL WEIGHT CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. MAX THROUGH OPENING SIZE IS 12.4 SQ. IN.

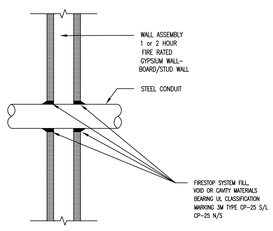
SEE CONCRETE BLOCKS (CAZT) CATEGORY IN FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

2. PIPE OR CONDUIT - NOM. 10 IN. DIA. (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 6 IN. DIA. (OR SMALLER) RIGID STEEL CONDUIT, NOM 4 IN. DIA. (OR SMALLER) STEEL EMT OR NOM 3 IN. DIA. (OR SMALLER). TYPE L (OR HEAVIER) COPPER PIPE. MAX ONE PIPE OR CONDUIT PER THROUGH OPENING. MAX ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF OPENING IS 3/4 IN. MIN ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND EDGE OF OPENING IS 0 IN. (POINT CONTACT). PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.
3. FILL VOID OR CAVITY MATERIALS - PUTTY-MOLDABLE PUTTY MATERIAL KNEESED BY HAND AND APPLIED TO FILL ANNULAR SPACE TO A MIN DEPTH OF 1 IN FLUSH WITH TOP SURFACE OF FLOOR. IN WALL ASSEMBLIES, REQUIRED PUTTY THICKNESS TO BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL.

MINNESOTA MINING & MFG. CO.- MPS-2+.
*BEARING THEUL CLASSIFICATION MARKING.

SYSTEM NO. WL1001

F RATING - 1 & 2 HOUR
T RATING - 0, 1, 1-1/2 & 2 HOUR



1. SEAL ALL PENETRATIONS IN ACCORDANCE WITH APPLICABLE CODES TO PRESERVE ORIGINAL FIRE HOUR RESISTANCE OF WALLS, FLOORS OR CEILINGS. USE UL DIRECTOY ASSEMBLY NOS. 49 & 328, AS APPLICABLE FOR ALL FIRE WALL PENETRATIONS.

2. AT FIRE SEPARATION WALLS, WRAP CONDUIT WITH 3M CONDUIT WRAP 1?-195 TO WITHIN 1/4" OF OPENING FILL THE GAP AND COVER EDGE OF WRAP WITH 3M-CP25 CAULK AND/OR #303 PUTTY.

FIRE ALARM SEQUENCE OF OPERATION MATRIX

NOTE:
BLANK = NOT APPLICABLE
R = REQUIRED ACTION

	FACP ALARM	FACP TROUBLE	FACP SUPERVISORY	ACTIVATE STROBE, COMBINATION HORN/STROBE & MINI-HORNS SYNCHRONIZED TO TEMPORAL TONE PATTERN THROUGHOUT THE BLDG.	ELEVATOR RECALL	ALTERNATE ELEVATOR RECALL	ELEVATOR SHUNT TRIP	ADA ROOM NOTIFICATION CIRCUIT	ACTIVATE AUDIBLE BASES THAT WILL PROVIDE CONSTANT TONE PATTERN IN ASSOCIATED APARTMENT	SEND LOCAL ALARM SIGNAL TO EXISTING CAMPUS NETWORK	SEND LOCAL TROUBLE SIGNAL TO EXISTING CAMPUS NETWORK	SEND LOCAL SUPERVISORY SIGNAL TO EXISTING CAMPUS NETWORK	SEND ALARM SIGNAL TO MXL LIVERMORE NETWORK	SEND TROUBLE SIGNAL TO MXL LIVERMORE NETWORK	SEND SUPERVISORY SIGNAL TO MXL LIVERMORE NETWORK
MANUAL PULL STAION	X	X		X				X		X			X		
AREA SMOKE DETECTOR	X	X		X				X		X			X		
ADA ROOM SMOKE DETECTORS		X	X					X	X			X			X
STANDARD ROOM SMOKE DETECTORS		X	X						X			X			X
ELEVATOR LOBBY - SMOKE DETECTOR " EXCEPT 1ST FLOOR"	X	X		X	X			X					X		
ELEVATOR LOBBY - SMOKE DETECTOR "1ST FLOOR ONLY"	X	X		X		X		X					X		
HEAT DETECTOR - ELEVATOR MACHINE RM./ELEVATOR SHAFT		X		X			X	X							
SMOKE DETECTOR - ELEVATOR MACHINE RM./ELEVATOR SHAFT	X	X		X	X			X					X		
WATERFLOW SWITCH	X	X		X				X					X		
VALVE TAMPER		X	X								X				X
INITIATING CKT STYLE C (CLASS B)															
OPEN WIRE		X									X			X	
GROUNDED WIRE		X									X			X	
SHORTED WIRES		X									X			X	
LOSS OF CARRIER		X									X			X	
NOTIFICATION CKT STYLE Y (CLASS B)															
OPEN WIRE		X									X			X	
GROUNDED WIRE		X									X			X	
SHORTED WIRES		X									X			X	
SIGNALING LINE CKT STYLE 4 (CLASS B)															
OPEN WIRE		X									X			X	
GROUNDED WIRE		X									X			X	
WIRE TO WIRE SHORT		X									X			X	
WIRE TO WIRE SHORT & OPEN		X									X			X	
WIRE TO WIRE SHORT & GROUND		X									X			X	
OPEN & GROUND		X									X			X	
LOSS OF CARRIER		X									X			X	

SEQUENCE OF OPERATIONS SUMMARY FOR AREA & ADA ROOM SMOKE DETECTORS

AREA SMOKE DETECTOR

ACTUATION OF ANY AREA SMOKE DETECTORS SHALL SEND ALARM SIGNALS TO FIRE ALARM CONTROL PANEL, TO EXISTING CAMPUS NETWORK SYSTEM AND TO LIVERMORE EXISTING NETWORK SYSTEM. IT WILL ACTIVATE THE BUILDING FIRE ALARM SYSTEM INCLUDING THE ADA ROOM NOTIFICATION CIRCUITS BY PROVIDING A TEMPORAL TONE PATTERN.

ADA ROOM SMOKE DETECTOR

ACTUATION OF ANY ADA ROOM SMOKE DETECTORS SHALL SEND SUPERVISORY SIGNALS TO FIRE ALARM CONTROL PANEL, TO EXISTING CAMPUS NETWORK SYSTEM AND TO LIVERMORE EXISTING NETWORK SYSTEM. DEVICE SOUNDER BASE WILL PROVIDE A CONSTANT TONE PATTERN IN ASSOCIATED APARTMENT ROOM ONLY. IT WILL ONLY ACTIVATE THE ROOM NOTIFICATION CIRCUIT BY PROVIDING A TEMPORAL TONE PATTERN BUT WILL NOT ACTIVATE THE BUILDING FIRE ALARM SYSTEM.

DEVICE DESIGNATION LEGEND

INITIATING DEVICES

EXAMPLES: ? 1.001

- DEVICE REFERENCE NUMBER
- INITIATING ALD LOOP DESIGNATION
- MXL NODE (BUILDING 9)
- DEVICE SYMBOL (SMOKE DETECTOR)

AUDIBLE / VISUAL CIRCUITS:

EXAMPLES: 15CD A1-1

- STROBE CANDELA RATING
- DEVICE REFERENCE NUMBER
- VISUAL CIRCUIT DESIGNATION
- DEVICE SYMBOL (HORN/STROBE)

WIRING SCHEDULE

WIRE SYMBOL	WIRE DESCRIPTION	USED ON
A	2-CONDUCTOR, #16 AWG SOLID, TWISTED, SHIELDED	ALD ADDRESSABLE LOOP DEVICES (ie. SMOKE/HEAT DETECTOR, TRI-SERIES)
B	2-CONDUCTOR, #12 AWG SOLID or STRANDED	NOTIFICATION APPLIANCE CIRCUIT: - STROBES - MINI HORNS - COMBINATION HORN/STROBES
D	2-CONDUCTOR, #12 AWG SOLID	24 VDC POWER TO: - ICP-B6 - MOM-2
E	2-CONDUCTOR, #12 AWG SOLID	24 VDC POWER (SUPERVISED) TO: - SOUNDER BASES
G	2-CONDUCTOR, #16 AWG SOLID CABLE	TRI to MONITORED DEVICES: - WATERFLOW SWITCH - VALVE POSITION SUPERVISORY SWITCH - PAD-3 - BACKFLOW VALVE
P	2-CONDUCTOR, #12 AWG SOLID or STRANDED	PAD-3: - ACTIVATION - HORN SILENCE
X	2-CONDUCTOR, #16 AWG SOLID, TWISTED, SHIELDED CABLE	"X-NET" - GLOBAL NETWORK WIRING -NIM-1W TO FIBER OPTIC MODULE
120 VAC	2-CONDUCTOR WITH GROUND #12 AWG SOLID, THHN COLOR TO MATCH NEC	120 VAC POWER TO CONTROL PANELS - MXL - WHEELOCK POWER BOOSTER PANELS

WIRING NOTE:

1. WIRING FOR NOTIFICATION APPLIANCE CIRCUIT IS CLASS B, STYLE Y.
2. WIRING FOR INITIATING DEVICES IS CLASS B, STYLE 4.
3. SEE WIRING GUIDELINES FOR CABLE TYPE USE.
4. CONDUIT FILL < 40%, 3/4" CONDUIT.
5. WHERE CIRCUIT ARE RUN UNDERGROUND, USE UNDERGROUND RATED CABLE.

NOTE: WIRE SIZES WILL VARY (USUALLY LARGER) TO ACCOMMODATE THE VOLTAGE DROP.

WIRING GUIDELINES

PLENUM CABLE VS. NON-PLENUM

THE NEC RECOGNIZES 3 TYPES OF POWER LIMITED FIRE ALARM CABLING:

FPL - THIS IS A GENERAL USE POWER LIMITED FIRE ALARM CABLE. IT CANNOT BE USED IN A PLENUM SPACE OR FOR RISERS (CABLING BETWEEN FLOORS), CABLE MUST BE IN CONDUIT.

FPLR - THIS IS A POWER LIMITED RISER RATED CABLE THAT CAN BE USED FOR GENERAL PURPOSES OR BETWEEN FLOORS. IT CANNOT BE USED IN A PLENUM SPACE, CABLE MUST BE IN CONDUIT.

FPLP - THIS IS A POWER LIMITED CABLE THAT CAN BE USED IN A PLENUM, RISER, OR FOR GENERAL PURPOSE.

A PLENUM IS ANY AREA USED TO CONDUCT ENVIRONMENTAL AIR. PLENUM SPACES CAN BE DUCTWORK, THE SPACE ABOVE A DROP CEILING, OR BELOW A RAISED FLOOR. BECAUSE THESE SPACES ARE BEING USED FOR THE AIR HANDLING SYSTEM. THERE ARE STRICT RULES THAT MUST BE FOLLOWED TO REDUCE THE RISK OF INTRODUCING TOXIC FUMES IN THE EVENT OF A FIRE. SINCE FIRE ALARM CABLING IS OFTEN INSTALLED EXPOSED, WITHOUT CONDUIT, ABOVE DROP CEILINGS THE CABLING MUST BE RATED FOR USE IN A PLENUM SPACE.

WIRING REQUIREMENTS

- THE DRAIN SHIELD IS A VERY IMPORTANT PART OF THE SYSTEM INSTALLATION. WE WOULD NOT SPECIFY SHIELDED CABLE IF IT WAS NOT NECESSARY. SHIELDS SHOULD BE KEPT CONTINUOUS THROUGHOUT THE CIRCUIT AND KEPT FREE FROM ANY REFERENCE TO EARTH GROUND.
- SHIELDED CABLE CAN BE FPL, FPLR, OR FPLP. SIEMENS INTELLIGENT ADDRESSABLE DEVICES REQUIRE SHIELDED CABLE.
- NOTIFICATION APPLIANCES (I.E. - SPEAKER/STROBES, HORNS, ETC.) REQUIRE NON-SHIELDED CABLE.
- UNDERGROUND CABLE, WHETHER OR NOT INSTALLED IN CONDUIT, SHALL BE LISTED AS UNDERGROUND BURIAL TYPE.
- WIRING IS TO BE INSTALLED POINT TO POINT WITH NO SPLICING.

REVISIONS

No.	Revision	By	Date	Appr.
1	REVISED PER FIRE MARSHAL'S COMMENTS DATED 02/12/09	JPM	2/27/09	KW
	AS-BUILT	JPM	8/10/09	KW

AS BUILT

C-10 APPROVAL STAMP:

STATE OF CALIFORNIA - CONTRACTORS STATE LICENSE BOARD - LIC. NO. 758796

ENGINEERING CONSULTANTS:

CUSTOMER'S NAME & ADDRESS

PRODUCT MANUFACTURER:

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California State C10 License No. 758796
U.L. Certificate ID No. 324787-001

JOB NAME & LOCATION (STREET ADDRESS)

LAWRENCE BERKELEY NATIONAL LABORATORY
BERKELEY LAB GUEST HOUSE
Berkeley, California

SHEET CONTENTS:
MISCELLANEOUS NOTES & DETAILS

INSTALLATION TYPE
- [x] NEW INSTALLATION
- [ ] DESIGN/BUILD
- [x] PER CONTRACT DOCUMENT
- [ ] EXISTING BASE JOB # N/A
- [ ] OTHERS

SYSTEM SALES REP.:	Kevin Waxman
PROJECT MANAGER:	Mark Millard
DRAWN BY:	John Paul Minas
CAD FILENAME:	FA-02
SCALE:	Not Applicable
DATE DRAWN:	February 12, 2009
PLOT DATE:	November 04, 2013
SHEET	FA-02
JOB NUMBER	44OP-048653
DRAWING NO.	6B23E004

IF DRAWING IS SMALLER THAN 30" X 42" IT IS A REDUCED COPY